BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:	Group Art Unit: 2644
Jon C. Taenzer	Examiner: Lee, Ping
Serial No.: 10/812,718	
Filed: March 29, 2004	
For: HEARING SYSTEM BEAMFORMER	

REPLY BRIEF UNDER 37 C.F.R. 41.41

Mail Stop Appeal Brief - Patents
Commissioner for Patents
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Applicant submits this Reply Brief pursuant to the Examiner's Answer mailed on November 15, 2007. This brief is submitted in triplicate.

A. Claims 17-52 satisfy 35 U.S.C. § 112

According to the Examiner's Answer, the § 112 argument is maintained because the summary section and figures 2, 7-11, 22, and 23 of the application allegedly do not disclose adjusting amplitudes based on "amplitude difference" as described in claims 17 and 23 (Examiner's Answer at 4:3-5:3). However, Applicant respectfully notes that it is improper to limit the support of the subject matter of claims 17 and 23 to only the summary and the above figures. For written description rejection under § 112, "the fundamental factual inquiry is whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, applicant was in possession of the invention as now claimed." MPEP 2163.02. Thus, the application *as a whole* must be examined to determine if applicant was in possession of the claimed invention.

In this case, the subject application describes embodiments of beam forming technique in which amplitudes are adjusted based on weighting ratios (*See* e.g., figures 2 and 7, and corresponding discussion on page 6 and 8 regarding "beamformer"). However, this is not the only beamforming technique described in the application. Indeed, page 15, lines 5-14 discuss beamforming technique based on head shadowing effect, and adjusting amplitudes in a beamformer embodiment. In addition, page 15, lines 18-21 of the application disclose amplitude difference between right ear and left ear signals in relation to head shadowing effect. Furthermore, figures 15, 16, 19, and 20, and their corresponding passages discuss interaural difference, and adjusting signals based on the interaural difference. Other embodiments of beamforming are discussed throughout the specification. Applicant further respectfully notes that it is also improper to limit the support for the claimed subject matter to the summary on page 3 of the application. According to the summary, the beamforming technique using weighting ratio is "one embodiment." As discussed, the specification also discloses other embodiments of beamforming technique, such as that based on amplitude difference between right ear and left ear signals in relation to head shadowing effect.

Applicant also disagrees with the Examiner that only figures 15, 16, 19, and 20, and page 15, lines 5-14 and 18-21 of the application can be used to support the limitation regarding summing adjusted signals. As discussed, the application *as a whole* must be examined to determine if

applicant was in possession of the claimed invention. In this case, figures 2, 7-11, 22, and 23 of the specification clearly disclose summing adjusted signals (see for example, "Σ" in figure 2).

Since the specification as a whole clearly conveys to those skilled in the art that Applicant was in possession of the claimed invention, Applicant respectfully submits that claims 17-52 satisfy 35 U.S.C. § 112.

B. Claim Rejections under 35 U.S.C. § 102

Claims 17, 19-21, 23, 25-27, 36, 46, and 47 are allegedly patentable under 35 U.S.C. § 102(b) over "Microphone-Array Hearing Aids with Binaural Output - Part II: A Two-Microphone Adaptive System" by Daniel P. Welker ("Welker").

Claim 17 recites determining adjusting the amplitudes of the signals based on the determined amplitude difference to produce adjusted signals, and *summing together the adjusted signals* (Emphasis added). Claim 23 recites similar limitations. Welker does not disclose or suggest the above limitations. According to page 8, second paragraph of the Examiner's Answer, figure 2 of Welker allegedly discloses "y" and "x," which are analogized as the claimed adjusted signals because the Examiner considered "y" and "x" as being determined based on amplitude difference (f_R-f_l). However, Applicant respectfully notes that "y" and "x" are not summed together in the system of Welker. Rather, "x" is processed by block w_k, and the result is then used to produce "y" (see figure 2 of Welker). Thus, in Welker, "x" is used to determine "y," and to the extent that "x" and "y" are considered adjusted signals, Welker does not disclose or suggest summing the adjusted signals (i.e., x + y).

The Examiner's Answer also cited to equation 1 on page 545 of Welker for the alleged disclosure of summing adjusted signals. However, equation 1 of Welker is an algorithm that is used for the adaptive filter of figure 2 (*See* paragraph above equation 1), and does not disclose summing "x" and "y" (which the Examiner considered to be the adjusted signals).

For at least the foregoing reasons, Applicant respectfully submits that claims 17 and 23, and their respective dependent claims, are patentable over Welker under 35 U.S.C. § 102.

C. **Claim Rejections under 35 U.S.C. § 103**

Claims 17, 18, 23, 24, 36, 42-45, and 49-52 are allegedly patentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,697,494 ("Klootsema").

Claim 17 recites determining a difference between amplitudes of signals respectively produced by the first and second sensors, and adjusting the amplitudes of the signals based on the determined amplitude difference to produce adjusted signals. Claim 23 recites similar limitations. According to page 7 of the Examiner's Answer, it would have been allegedly obvious to modify Klootsema by determining an amplitude difference so that the signals may be matched. Applicant respectfully disagrees. Just because matching of signals is desired, it does not necessitate a finding that the signals are matched using an amplitude difference.

Applicant notes that, for the first time, Official Notice is taken that it is allegedly well known to use amplitude difference in the shifting technique described in Klootsema (*See* Examiner's Answer on page 7, second paragraph). To the extent that such Official Notice is considered new evidence, Applicant notes that 37 C.F.R. § 41.33(d)(2) precludes evidence be admitted after the appeal date. Also, Applicant respectfully traverses the Official Notice. Klootsema discloses a unique system in which shifting is performed by adjusting a signal - i.e., the signal from speaker 3a, using a filter 7 (figure 1, and 2:5-9 of Klootsema). There is no evidence on the record that it is well known in the art to use amplitude difference in such shifting technique.

Applicant also respectfully submits that even assuming that Klootsema discloses determining amplitude difference (which is not true), there is nothing in Klootsema that discloses or suggests adjusting *both* left and right signals based on the *same* amplitude difference (Emphasis added). Notably, Klootsema specifically teaches adjusting only one signal - i.e., the signal from speaker 3a, using filter 7 (*See* figure 1, and 2:5-9, specifically stating that "the digital signal" (i.e., singular) is matched). Thus, Klootsema does not disclose or suggest adjusting *both* left and right signals (much less, adjusting both signals based on the *same* amplitude difference), and in fact teaches away from the example of matching technique described on page 9, second paragraph, of the Examiner's answer (arguing that both signals are adjusted).

For at least the foregoing reasons, Applicant respectfully submits that claims 17 and 23, and their respective dependent claims, are patentable over Klootsema under 35 U.S.C. § 103.

For the above reasons, Applicant respectfully submits that claims 17-35 are patentable and that the subject application is in condition for allowance. Accordingly, Applicant respectfully requests that the Board of Patent Appeals and Interferences overrule the Examiner and allow claims 17-35.

Respectfully submitted,

Dated: 1/8/08

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